

Claims 13-17 and 41-45 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yamamoto et al or Rau et al and further in view of Sasaki et al.

The Examiner asserts that the argument that Yamamoto et al and Rau et al fail to teach carboxylated nitrile rubbers is not persuasive because the monomers used in formulating the claimed carboxylated nitrile rubbers are suggested in the patents. The Examiner further asserts that whether the patents disclose the nitrile rubber as being hydrogenated is not germane to patentability because hydrogenated nitrile falls within the scope of the claims.

Further, the Examiner states that the argument that the secondary references are not combinable with Yamamoto et al and Rau et al and are non-analogous art is not persuasive because the secondary references are cited to show that certain materials function as claimed, i.e., the lubricant of Ryokey et al and fillers of Sasaki et al are known ingredients and would be expected to function in an art recognized manner when added to the rubber compositions of the primary references.

Applicants respectfully traverse the rejections and submit that none of the cited references teaches or suggest the presently claimed invention, whether taken alone or in combination. The present claims are directed to a rubber material composition comprising carboxylated acrylonitrile-butadiene rubber, carbon black and a polyolefin resin. Contrary to the Examiner's assertion, a hydrogenated nitrile is not within the scope of the present claims and the Examiner has not provided a reasonable technical basis for making such a statement.

Applicants respectfully submit that the claimed carboxylated acrylonitrile-butadiene rubber is different from the hydrogenated acrylonitrile-butadiene of Yamamoto. Specifically,

copolymerization of ethylene-acrylic acid ester, which is disclosed in Yamamoto is categorized as an acryl rubber. In the molecular structure of the compound of Yamamoto, there are ester groups, (-COR); however, there are no carboxyl groups (-COOH).

A hydrogenated nitrile rubber is obtained by polymerization of acrylonitrile and butadiene, both of which are monomers, to obtain nitrile rubber (more correctly acrylonitrile butadiene rubber); and adding hydrogen to one double bond of a butadiene portion remaining in the thus obtained nitrile rubber.

On the contrary, a carboxylated acrylonitrile butadiene rubber is obtained, in addition to acrylonitrile and butadiene which are monomers of the nitrile rubber, acrylic acid and methacrylic acid, which are monomers having a carboxylic group, are added and polymerized. Thus, a carboxylated acrylonitrile butadiene rubber is different from the hydrogenated acrylonitrile butadiene rubbers taught by Yamamoto et al.

Further the Examiner cannot ignore elements of a claim. Therefore, the Examiner's statement that the fact that the nitrile rubber in the primary references, Yamamoto et al and Rau et al, is hydrogenated is not germane to patentability is improper. The claimed carboxylated acrylonitrile-butadiene rubber is structurally different from a hydrogenated acrylonitrile-butadiene rubber as discussed above. While Yamamoto et al and Rau et al mention carboxylic monomers that may be used, neither one actually employs a carboxylated acrylonitrile-butadiene rubber in the working examples. Further, Yamamoto et al specifically teaches a preferred molar ratio of the unsaturated nitrile and conjugated diene and degree of hydrogenation of the conjugated diene portion of the hydrogenated unsaturated nitrile-diene

copolymer. Thus, one of ordinary skill in the art would not have been motivated to modify Yamamoto et al as suggested by the Examiner.

In addition, the present specification discloses that due to the structure of the carboxylated acrylonitrile-butadiene rubber, cross-linking occurs not only at the double bond of the butadiene but also at the carboxyl group. This causes the cross-linking density to increase and as cross-linking density increases the tensile strength of the rubber material composition improves as compared to the case where an ordinary acrylonitrile-butadiene rubber is employed. As a result, abrasion resistance and bending fatigue resistance is improved. See page 13, lines 10-19. Thus, a carboxylated acrylonitrile-butadiene rubber is an important feature of the claimed invention, which cannot be ignored and must be given patentable weight. If a hydrogenated nitrile rubber is employed, the desired improvement in tensile strength cannot be obtained.

Additionally, the secondary references, Sasaki et al and Ryoke et al do not remedy the deficiencies of Yamamoto et al and Rau et al. Further, Ryoke et al is non-analogous art for the reasons set forth in the Amendment filed on June 24, 2005, which are incorporated herein by reference.

Even further, claims 9-11 recite an amount of carboxyl groups for the carboxylated acrylonitrile-butadiene rubber. The present specification discloses that if the amount of carboxyl groups in the obtained polymer in terms of acid-equivalent weight is less than the recited range, the cross-linking density is almost the same in comparison with acrylonitrile-butadiene rubber and the tensile strength and abrasion resistance is hardly improved. If the

amount of carboxyl groups in the obtained polymer in terms of acid-equivalent weight is more than the recited range, the cross-linking density is too high and problems will occur with respect to various physical properties of the rubber material composition (spring hardness, tensile rupture elongation of scorching). Thus, the carbonyl group content is a feature of the claimed invention with respect to claims 9-11 that cannot be ignored. None of the cited references teaches or suggests this additional element of the presently claimed invention as recited in claim 9.

In view of the above, the presently claimed invention is not rendered obvious over the cited references. Accordingly, Applicants respectfully request withdrawal of the rejection.

II. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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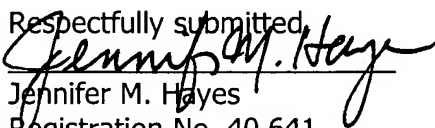
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